UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 6,983,599 B2
APPLICATION NO. : 10/777567
DATED : January 10, 2006
INVENTOR(S) : Craig Young et al.

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Col. 7 line 57 - Col. 10 line 9;
Please replace claims 1-14 with the following claims 1-14:

1. A turbine engine combustor member at a combustor interior and including at least one surface exposed directly to combustion of fuel within the combustor interior comprising:
 a member body made of an alloy based on at least one element selected from the group consisting of Fe, Co, and Ni having an alloy high temperature operating capability within a temperature range of about 1300 - 2300º F, and properties comprising a combination of resistance to hot corrosion and to oxidation within the temperature range, the properties including:
 a) a hot corrosion resistance as defined and measured by a depth of attack on an alloy surface of less than about 0.01 inch, after exposure to about 2 parts per million sea salt in a gaseous medium, cycled in a temperature range of about 1500 -1700º F for about 1000 hours; and,
 b) an oxidation resistance as defined and measured by an alloy surface loss of less than 0.001 inch after cyclic testing for about 120 hours in an oxidizing gas stream at a velocity of about Mach 1 for about 20 cycles per hour from ambient to about 2150º F;
 the member body including a member body inner first surface exposed to the combustor interior and the combustion of fuel; and, a member body outer second surface not exposed directly to the combustor interior;
 the member body inner first surface including thereon a high temperature environmental resistant coating comprising a ceramic-base thermal barrier coating;
 the member body outer second surface being substantially uncoated.
2. The combustor member of claim 1 in which the coating is a coating system comprising an inner coating including Al on the member body inner first surface, and the ceramic-base thermal barrier coating is an outer coating on the inner coating.
3. The combustor member of claim 2 in which the inner coating comprises MCrAl in which M is at least one element selected from the group consisting of Fe, Co, and Ni.
4. The combustor member of claim 3 in which the inner coating comprises a plurality of layers including:
a first layer on the member body inner surface having a first microstructure of a first density in the range of about 90 – 100 % and a first surface roughness in the range of about 50 – 200 microinches; and,
a second layer on the first layer having a second microstructure of a second density in the range of about 60 – 90 % and a second surface roughness in the range of about 300 – 800 microinches.
5. The combustor of claim 2 in which the inner coating comprises PtAl.

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Col. 7 line 57 - Col. 10 line 9 (cont'd);
6. The combustor member of claim 1 in which the alloy is a Ni base alloy comprising, in weight percent, from about 1 to about 3 rhenium, from about 6 to about 9 aluminum, from about 4 to about 6 tantalum, from about 12.5 to about 15 chromium, from about 3 to about 10 cobalt, and from about 2 to about 5 tungsten, with the balance essentially Ni and impurities.
7. The combustor member of claim 1 in which the member is selected from the group consisting of deflectors, splash plates, center bodies, swirlers and combustor liners.
8. A turbine engine combustor member at a combustor interior and including at least one surface exposed directly to combustion of fuel within the combustor interior comprising:
a member body made of an alloy based on at least one element selected from the group consisting of Fe, Co, and Ni having an alloy high temperature operating capability within a temperature range of about 1300 - 2300º F, and properties comprising a combination of resistance to hot corrosion and to oxidation within the temperature range, the properties including:
a) a hot corrosion resistance as defined and measured by a depth of attack on an alloy surface of less than about 0.01 inch, after exposure to about 2 parts per million sea salt in a gaseous medium, cycled in a temperature range of about 1500 - 1700º F for about 1000 hours; and,
b) an oxidation resistance as defined and measured by an alloy surface loss of less than 0.001 inch after cyclic testing for about 120 hours in an oxidizing gas stream at a velocity of about Mach 1 for about 20 cycles per hour from ambient to about 2150º F;
the member body including a member body inner first surface exposed to the combustor interior and the combustion of fuel, and a member body outer second surface not exposed directly to the combustor interior;
the member body including therethrough air cooling passages to pass cooling air from the member body outer second surface to the member body inner first surface;
the member body inner and outer surfaces being substantially uncoated.
9. The combustor member of claim 8 in which the member body outer second surface defines at least in part a member hollow interior.
10. The combustor member of claim 9 in which the member is selected from the group consisting of combustor center bodies and combustor liners.

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Col. 7 line 57 - Col. 10 line 9 (cont'd);
11. In a method for making a turbine engine combustor assembly, the steps of:
providing a plurality of turbine engine combustor members for assembly at a combustor interior and including at least one surface exposed directly to combustion of fuel within the combustor interior, each member including a member body made of an alloy based on at least one element selected from the group consisting of Fe, Co, and Ni having an alloy high temperature operating capability within a temperature range of about 1300 – 2300º F, and properties comprising a combination of resistance to hot corrosion and to oxidation within the temperature range, the properties including:
a) a hot corrosion resistance as defined and measured by a depth of attack on an alloy surface of less than about 0.01 inch, after exposure to about 2 parts per million sea salt in a gaseous medium, cycled in a temperature range of about 1500 -1700º F for about 1000 hours; and,
b) an oxidation resistance as defined and measured by an alloy surface loss of less than 0.001 inch after cyclic testing for about 120 hours in an oxidizing gas stream at a velocity of about Mach 1 for about 20 cycles per hour from ambient to about 2150º F;
the member body including a member body inner first surface for exposure to the combustor interior and the combustion of fuel, and a member body outer second surface not exposed directly to the combustor interior, the member body inner and outer surfaces being substantially uncoated;
assembling the plurality of members into a combustor with the inner first surfaces exposed to the combustor interior;
applying to the assembled inner first surfaces a high temperature environmental resistant coating using an air spray coating method that coats all of the assembled inner first surfaces substantially concurrently.
12. The method of claim 11 in which applying the high temperature coating comprises a plurality of steps including:
applying an inner coating including Al disposed on the member body inner first surfaces; and then,
applying a ceramic-base thermal barrier coating on the inner coating.
13. The method of claim 12 in which the inner coating comprises MCrAl in which M is at least one element selected from the group consisting of Fe, Co, and Ni and the ceramic base coating is zirconia stabilized with yttria.

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Col. 7 line 57 - Col. 10 line 9 (cont'd);
14. The method of claim 13 in which the inner coating comprises a plurality of layers including:
a first layer on the member body inner surface having a first microstructure of a first density in the range of about 90 –100 % and a first surface roughness in the range of about 50 – 200 microinches; and,
a second layer on the first layer having a second microstructure of a second density in the range of about 60 – 90 % and a second surface roughness in the range of about 300 – 800 microinches.

Signed and Sealed this

Twentieth Day of November, 2007

Jon W. Dudas

JON W. DUDAS
Director of the United States Patent and Trademark Office